

## Hoppe, Michael

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**From:** Stan Kaczmarek [StanK@demaximis.com]  
**Sent:** Monday, November 11, 2013 3:33 PM  
**To:** Vaughn, Stephanie  
**Cc:** Sharon Budney; Amy Picunas; Frank Tsang; Gary.Foster@CH2M.com; George.Hicks@CH2M.com; Jennifer.Wilkie@CH2M.com; John Rolfe; Willard Potter; Robert Law; Hoppe, Michael; Todd King; Elizabeth A NWK Franklin  
**Subject:** Re: FW: RM 10.9, capping....  
**Attachments:** 20131108\_Dredge\_SW\_Correlations.pptx

Stephanie,

CPG's response to the questions posed and directions provided in your November 7 email follow.

### **Capping Plan - Weather Contingencies**

- AquaBlok indicates that freezing and repeated freeze-thaws will not have an adverse impact on their AquaGate product; at worst it could lead to condensation within the bags.
- In regards to rain, bags of AquaGate have been shipped in waterproof, heavy duty, woven polyethylene bags. As an added measure of protection, a second layer of protection consisting of a 6-mil pallet cover bag has been added to each bag that will not be removed until they are delivered to the hopper. During heavy rains, the stored AquaGate may be covered by a tarp. When capping is proceeding at design speeds (1 bag of AquaGate for every 7-10 minutes of running time), there will be minimum exposure of the AquaGate product to moisture even in light rains. The material loaded into the AquaGate hopper will be closely monitored near the end of the working day to ensure that all product is utilized. This will be done to avoid damage to product left within the hopper should a rain event occur during down times.
- One of the potential impacts of excess moisture (from rain or condensation) is to make the AquaGate product stickier. Thus Great Lakes Dredge and Dock has installed aggressive mechanical bin vibrating equipment (on the hoppers) to prevent "bridging" of the AquaGate product within the hopper chute. CPG believes that these steps will provide adequate protection to the final mixture from any rain or cold.

### **Water Quality Monitoring Plan - COPC vs Turbidity**

- EPA's request for additional analysis of COPC's vs Turbidity appears based on a desire to derive additional understanding from the water quality data collected during dredging and pre-dredging periods, data that was previously submitted to EPA. The requested analysis (summarized in the following bullets) is irrelevant to capping because the source of any increased turbidity during capping, if any, will be clean sand, clay and carbon fines and not resuspended sediment.
- CPG's September 9, 2013 technical memorandum established a statistically significant correlation with an R-Square value of 0.94 (p-value < 0.001) for samples collected during dredging between Turbidity and Suspended Solids Concentration (SSC) in the surface water adjacent to the RM 10.9 Removal Area, .

- Attached in PowerPoint format are graphs showing correlations of TCDD vs SSC, Total PCBs vs SSC, and Mercury vs SSC for all data collected during dredging, including a subset of correlations for data segregated by tide cycle. This analysis indicates that the correlation of COPC concentrations to suspended solids (and by inference, turbidity) is not as strong as Turbidity vs. SSC. The best correlation is between Mercury and Suspended Solids with a linear R-square value of 0.52 (0.54 if data collected only at low tide is considered), however the correlations significantly diminish for the other COPCs, particularly at high tide, where R-square values range only from 0.08 to 0.15.

### **Water Quality Monitoring - Turbidity Tracking**

- CPG will continue to conduct real-time turbidity monitoring during the capping operations. Work will be adjusted and/or stopped temporarily if elevated turbidity is measured and attributed to the capping operations.

### **Water Quality Monitoring - COPC Sampling**

- CPG believes that mobilization of COPCs from the Removal Area sediments will not occur during capping. Nonetheless, the CPG will implement EPA's recommended modification of the WQMP by collecting weekly composite samples from transects only at buoy locations 2 and 3, and analyzing them for TCDD/TCDF, Total PCBs, Mercury and Suspended Solids. The first samples are scheduled to be collected on Wednesday, November 13. Normal Turn-Around-Time will be utilized and results will be submitted when they are available.
- After 2 weeks, turbidity data monitored during capping operations will also be reviewed, summarized and submitted to EPA. If the data show that capping has not led to an increase in turbidity above ambient levels, then a recommendation will also be made to discontinue the water quality transect sampling for the duration of the capping process.

Please call me if you have any questions.

#### **Stan Kaczmarek, PE**

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>>> On 11/7/2013 at 4:56 PM, in message  
<0126bf13400f44ceb605256293fab37f@BY2PR09MB032.namprd09.prod.outlook.com>, "Vaughn, Stephanie"  
<Vaughn.Stephania@epa.gov> wrote:

I meant add that we may have some additional comments on the Water Quality Monitoring Plan, and the accompanying memo.

Thanks

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**From:** Vaughn, Stephanie  
**Sent:** Thursday, November 07, 2013 4:52 PM  
**To:** 'Stan Kaczmarek'  
**Cc:** Hoppe, Michael; Budney, Sharon; Picunas, Amy; Tsang, Frank; 'Franklin, Elizabeth A NWK'  
**Subject:** RM 10.9, capping....

Hi Stan,

We have a few additional comments/questions on the capping program.

1. The capping plan doesn't really address any contingency measures. For example, rain can adversely affect the carbon and freezing conditions can adversely affect the clay. How will these issues be dealt with, if needed?
2. Water Quality Monitoring Plan – we reviewed the 10/30/2013 memo outlining your proposed water quality monitoring plan during capping, and have the following comments:
  - The analysis does not include any correlation studies to support the relationship between turbidity and COPCs in the water column. This analysis needs to be completed so we can understand the extent of the relationship, if any.
  - While turbidity monitoring is still being proposed, the triggers have been removed. The same triggers that were used during dredging need to be used during capping operations, and work needs to be adjusted and/or stopped temporarily if unacceptable turbidity is found to have resulted from the operation. Previous experience shows that there is a higher likelihood of turbidity issues during capping operations than during dredging.
  - While we agree that mobilization of COPCs is likely less of an issue during capping than during dredging, the potentially increased turbidity could still cause releases. As such, we recommend that limited COPC sampling be conducted during placement of the active cap layer. Our recommendation is that 1 COPC sample be analyzed per week from buoy locations 2 and 3. As during dredging, water should be collected along a transect at each location and composited into a single sample for each transect. Since placement of the active layer is expected to take 3 to 4 weeks, a total of 6 to 8 additional COPC samples will be needed. If a sufficiently fast turnaround time is used, and the results support it, this sampling may be able to be decreased.

Please let me know if you have any questions. I will not be working tomorrow, but will check my email in the morning. Feel free to call me on my cell if we need to discuss anything.

Thanks,  
Stephanie